REJECTION UNDER 35 U.S.C. 112, SECOND PARAGRAPH

Claim 5 has been amended to be in a proper form. The phrase "with the air of cutting marks formed" in the last paragraph is replaced with -- , wherein each device is provided with --.

In addition, in the second paragraph, the phrase -- , wherein said first metallic layers are thicker than said second metallic layers -- has been added. This limitation has the support in Figure 2A and in the specification (p. 18, line 24 - p. 19, line 6).

Claims 6-8 depend from claim 5. Consideration of claim 5-8 for allowance is respectfully requested.

REJECTION UNDER 35 U.S.C. 102(e)

Claims 1 and 4 were rejected under 35 U.S.C. 102(e) as being anticipated by Jung et al. (U.S. 2001/0049156).

Claim 1 has been amended to include the limitations of claim 3, which read in part: "said first metallic layer is thicker than said second metallic layer, and said first metallic layer has a smaller area than a bottom area of the semiconductor element." These limitations are supported in Figure 2A and in the specification (see p. 11, lines 12-18, p. 18, line 24 – p. 19, .line 6, and p. 9, lines 16-18).

Applicant believes that the device of the present invention is distinguishable from Jung's device.

Jung does not disclose or suggest that the first metallic layer or the die pad (232) is thicker than the second metallic layer or the connecting pad (230), as specified in claim 1.

In contrary, in Figure 3, Jung illustrates equal thickness between the die pad (232) and the connection pad (230). In Figures 4-10 and Figures 12-15, Jung illustrates the method for evenly laminating the metal layer (270) on the sheet carrier 260, and forming the die pad (232) and the connection pad (230) with uniform thickness by etching areas on the metal layer (270). (See also paragraphs 0023, 0028, 0034 and 0037). According to the illustration and the corresponding description, the die pad (232) and the connection pad (230) are of the same thickness.

In addition, it is significant to note that the thickness of the metallic layers of the present invention is substantially less than the thickness of the die pad (232) and the connection pad (230) of Jung. The metallic layers 8a and 8b of the present invention have the thickness of Ni or

Ni-Co alloy thin film (20-35 μm) and gold thin film (0.3 μm). (See page 13, lines 13-17), with the metallic layer 8a being thicker than the metallic layer 8b. (Figure 2A). It is also indicated that the semiconductor element of the present invention is sealed in the resin package at the height of about 20 μm or more from the bottom of the resin package. (See page 11, lines 16-18).

Since the metallic layers 8a and 8b are relatively very thin, the device of the present invention has an advantage in that it can be made with substantially low height so that good heat dissipation from the semiconductor element can be realized. (page 4, lines 7-8). Further, the thin metallic layers feature of leadless semiconductor device of the present invention provides good conductivity when compared with the semiconductor device using lead. (page 4, lines 10-12).

In addition, the combination of the thicker metallic layer 8a than the metallic layer 8b and the smaller area of the metallic layer 8a than the bottom area of the semiconductor element provides sufficient creepage distance from the bottom of the resin package to the semiconductor element and thus increases the resistance to humidity and allows better seal of the semiconductor element. (See p.5 lines 8-14). Further, since the metallic layer on which the semiconductor is placed is made thicker, the semiconductor element can be arranged centrally within the resin package. For this reason, even when the semiconductor device suffers from thermal stress, the resin package is not easily ruptured.

In contrast, Jung emphasizes that both the die pad (232) and the connection pad (230) "are far thicker than conventional die pad and connection pads formed by plating. The thickness of them are preferably 2-5 mil. . . ." (p. 2, paragraph 0019, lines 12-15). The thickness of the pads can reach 20 mil. (p. 2, paragraph 0019).

Since Jung solves the moisture problem by substantially increasing the thickness of both pads, it is not necessary for Jung to consider differential thickness of the pads or the difference in sizes of the semiconductor element and the die pad. Increasing the thickness of the die pad will make Jung's device substantially bulkier than that of claim 1.

In view of the above reasons, Jung neither anticipates nor renders obvious the device of claim 1. Therefore, the rejection of claim 1 and 4, based on Jung, should be withdrawn.

REJECTION UNDER 35 U.S.C. 103(a)

Claims 2 and 3 were rejected under 35 U.S.C. 103 (a) as being unpatentable over Jung (U.S. 2001/0049156)

Claims 2 and 3 have been cancelled. The limitations of claim 3 have been incorporated in the independent claim 1. Based on the cancellation of claims 2 and 3 and the reasons set forth in the above section for the allowability of claim 1, the rejection based on Jung should be withdrawn.

NEW CLAIM

Claim 9 has been added. Claim 9 defines the thickness of the first and the second metallic layer to be about 20 μm to about 35 μm. The subject matter of claim 9 is supported in the specification (see page 12, lines 13-17).

As discussed above, the thickness of the metallic layers of the device of the present invention is substantially different from what is disclosed in Jung (2-5 mil; see page 2, paragraph 0019).

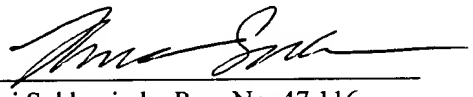
In view of the above amendments and remarks, Applicant believes that claims 1, 4 and 5-9 are allowable. Reconsideration of this application and action towards issuance is therefore requested.

Pursuant to revised rule 37 C.F.R. 1.121, the foregoing amended claims are presented in clean form without markings and another version of the rewritten claims, marked up to show all the changes, is attached to this response. Applicant believes that these claim amendments are in proper form and comply with revised rule 1.121.

If upon consideration of the above, the Examiner should feel that there remains outstanding issues in the present application that could be resolved, the Examiner is invited to contact applicants' patent counsel at the telephone number given below to discuss such issues.

To the extent necessary, a petition for an extension of time under 37 CFR §1.136 is hereby made. Please charge the fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 02-0385 and please credit any excess fees to such deposit account.

Respectfully submitted,

By 

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## VERSION WITH MARKINGS TO SHOW CHANGES MADE

1. (Amended) A semiconductor device comprising:

a semiconductor element bonded on a first metallic layer;

a wire for electrically connecting an electrode pad of the semiconductor element to a second metallic layer; and

a resin package for sealing said semiconductor element,

wherein rear surfaces of the first metallic layer and the second metallic layer are flush with a bottom of said resin package, and wherein said first metallic layer is thicker than said second metallic layer, and said first metallic layer has a smaller area than a bottom area of the semiconductor element.

2. Cancelled

3. Cancelled

5. (Amended) A method of manufacturing a semiconductor device comprising the steps of:

forming an electrodeposition frame on a flexible flat metallic substrate, said electrodeposition frame [with] having first metallic layers and second metallic layers for external extension being patterned, wherein said first metallic layers are thicker than said second metallic layers;

contiguously mounting a plurality of semiconductor elements, each with electrode pads thereon, on said first metallic layers [, respectfully];

wire-bonding the electrode pads to said second metallic layers which are located between said semiconductor elements;

resin-sealing said semiconductor elements mounted on said electrodeposition frame;

removing said metallic substrate to provide a resin sealing body; and

cutting said resin sealing body into individual semiconductor devices [with the air of the cutting marks formed the first and second metallic layers], wherein each device is provided with the first and second metallic layers.

9. A semiconductor device according to claim 1, wherein the thickness of each of said first metallic layer and said second metallic layer is between about 20 μm and about 35 μm (micrometers).

## CLAIMS CURRENTLY PENDING IN APPLICATION (as of August 2002)

1. (Amended) A semiconductor device comprising:

a semiconductor element bonded on a first metallic layer;

a wire for electrically connecting an electrode pad of the semiconductor element to a second metallic layer; and

a resin package for sealing said semiconductor element,

wherein rear surfaces of the first metallic layer and the second metallic layer are flush with a bottom of said resin package, and wherein said first metallic layer is thicker than said second metallic layer, and said first metallic layer has a smaller area than a bottom area of the semiconductor element.

4. A semiconductor device according to claim 1, wherein said second metallic layer is individually exposed from a bottom of said resin package.

5. (Amended) A method of manufacturing a semiconductor device comprising the steps of:

forming an electrodeposition frame on a flexible flat metallic substrate, said electrodeposition frame having first metallic layers and second metallic layers for external extension being patterned, wherein said first metallic layers are thicker than said second metallic layers;

contiguously mounting a plurality of semiconductor elements, each with electrode pads thereon, on said first metallic layers;

wire-bonding the electrode pads to said second metallic layers which are located between said semiconductor elements;

resin-sealing said semiconductor elements mounted on said electrodeposition frame;

removing said metallic substrate to provide a resin sealing body; and

cutting said resin sealing body into individual semiconductor devices, wherein each device is provided with the first and second metallic layers.

6. A method of manufacturing a semiconductor device according to claim 5, further comprising after the step of cutting, the step of:

depositing metallic layers for electrodes to the second metallic layers exposed from a rear surface of said resin sealing body.

7. A method of manufacturing a semiconductor device according to claim 5, wherein in said step of cutting of said resin sealing body, it is cut along a center line of each of the second metallic layers to provide metallic layers for external extension for adjacent semiconductor elements.

8. A method of manufacturing a semiconductor device according to claim 5, whrein said electrodeposition frame is resin sealed together with said semiconductor elements using said metallic substrate as a lower die.

9. A semiconductor device according to claim 1, wherein the thickness of each of said first metallic layer and said second metallic layer is between about 20 μm and about 35 μm (micrometers).